

THE IMPACT OF  
PLATO Learning, Inc.  
TECHNOLOGY

in  
**East Rock Magnet School**  
**New Haven, CT**

CRF and ASSOCIATES, INC.  
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# Executive Summary

This report outlines the experiences of staff and faculty at East Rock Magnet School as they strive to increase student performance and prepare students for a rapidly changing world by adopting a technology-based approach to teaching and learning.

In selecting the PLATO Technology program, East Rock provided students, teachers, administrators and parents with regular access to computers and the Internet. During the course of the study, NetSchools was purchased by PLATO Learning, Inc. Therefore, the platform is referred to in this report as PLATO.

The use of the PLATO solution:

- Increased professional competencies of teachers and administrators in using technology to accomplish educational objectives;
- Increased technology skills and information literacy of students;
- Increased pervasive and consistent integration of technology in every 3<sup>rd</sup> through 5<sup>th</sup> grade classroom;
- Increased academic performance of students;
- Increased use of technology to help students reach challenging academic standards;
- Increased emphasis on higher order thinking skills;
- Increased use of technology to facilitate the learning with different learning styles and skill levels;
- Increased awareness of connections between school activities and careers;
- Strengthened teachers' professional learning communities;
- Increased communication among members of the school community;
- Increased dialogue between school and parents to make technology more accessible to the community; and
- Assisted with the implementation of the No Child Left Behind Act

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The results are based on surveys of the instructional leaders, i.e., the administrators and teachers, who used modified versions of instruments developed by the South East and Islands Regional Technology Consortium (SEI·TEC) to assess student and teacher use of technology. The authors adapted instruments from the PLATO Technology Program's Professional Development Services and conducted focus groups. They also examined a wide variety of data provided by the schools, including scores from various assessments, to illustrate progress.

The surveys showed considerable growth on close to 100% of the measures for both students and teachers, based on the perceptions of teachers and administrators. This encompassed not only actual usage of technology applications but also attitudinal shifts. The two areas in which no growth was evident were the administrative perception that technology increased student motivation and the teachers' use of HTML tags. For the former, both teachers and administrators recognized the relationship between technology and motivation both before and after the PLATO program. In the latter instance, a small group of teachers were using HTML tags before the PLATO program; while the actual number may have increased, it did not exceed 25% of the teachers surveyed.

While further study is necessary to assess the long-term impact of implementation of the PLATO program, these preliminary findings suggest that the program provides a usable framework for integrating technology into K-12 schools. Technology has a positive impact on student performance, school capacity and community involvement.

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# Introduction

On January 8, 2002, President Bush signed into law the No Child Left Behind Act of 2001 (NCLB). This new law represents his education reform plan and contains the most sweeping changes to the Elementary and Secondary Education Act (ESEA) since it was enacted in 1965. It changes the federal government's role in kindergarten through grade 12 education by asking America's schools to describe their success in terms of what each student accomplished. The act contains the President's four basic education reform principles: stronger accountability for results, increased flexibility and local control, expanded options for parents, and an emphasis on teaching methods that have been proven to work.

School systems across the country are using innovative instructional strategies and professional development drawn from scientifically-based research to help students attain the knowledge and skills they need to meet higher state standards and the increased demands of today's workforce.

Elementary and secondary school systems, as well as colleges and universities, are spending increasingly more money on instructional technology. Last year, educators spent more than six billion dollars in supporting technology initiatives. These initiatives have increased access to technology. Today, there is slightly more than one computer for every five students. The ratio of students to an Internet-connected computer is almost as good.

Nonetheless, parents, teachers, administrators, school boards and legislators across the country are concerned about the effectiveness of technology use in schools, and homes. They are interested in how best to integrate technology into instructional strategies. If federal, state and local resources for technology are to continue to increase, the effectiveness and impact of technology and its various uses must be prominently demonstrated.

Educators must think broadly about fully integrating technology into the school community and, by extension, the community at large. Linking technology with instructional objectives to increase student performance on state assessments and other standardized tests is an important beginning. However, used creatively and strategically, technology also contributes to other goals and positive educational outcomes, such as developing critical thinking skills, facilitating research abilities, learning special applications and using e-mail to communicate with experts and other students around the world. Schools have a tremendous opportunity to teach community members to use technology as a tool to enhance learning in and beyond the classroom walls.

In order to measure more comprehensive uses of technology, traditional practices for measuring the impact of technology in education need to be broadened. Information is needed not only on the skills and knowledge that students gain from using technology but also its impact on teacher methodology, organizational change and outcomes at different stages of implementation. Input from teachers, students, parents and administrators is crucial as we evaluate the impact of technology.

In this study, CRF and Associates examined the impact that the PLATO technology has made in The East Rock Magnet School. This report is a summary of the findings.

## About East Rock Magnet School

East Rock Magnet School is located in New Haven, Connecticut. It serves 819 students in kindergarten through eighth grades. Students are selected to attend East Rock through the New Haven School District's Magnet Program designed to offer school choice in the district. Any student is eligible to apply to attend East Rock after completing a public school of choice application that simply asks for contact information, demographic data, and grade level. Students are selected at random, although preference is given to siblings of currently enrolled students and students in the school's neighborhood. Approximately 55% of the student population identifies as black, 25% as Hispanic, 12% as white, 4% as Asian and 4% as other. East Rock students represent 35 different nationalities. Seven percent of the students have limited English proficiency. East Rock is a Title I School that has worked diligently to reduce the racial, ethnic, and economic isolation of its community.

The curriculum at East Rock centers on a Global Studies theme. This structure values the diversity of the student body while providing opportunities for students to focus on issues that affect the world today. Additionally, technology has been fully integrated into the educational program at East Rock. The Media Center is the focal point of the school, as students and teachers take advantage of the myriad of multimedia resources. The Library Media center supports collaboration, resource-based learning, curriculum mapping, flexible scheduling, and reading incentive programs, which form the foundation of the school's operational philosophy. The school's collection consists of well over 16,000 print and non-print materials. Through the Media Center students and teachers can access the technology center and television studio to support and enrich their academic pursuits. Each classroom is equipped with up to four student computers and one teacher computer, all with internet access. Additionally, during the 2002-2003 academic year, East Rock implemented the PLATO program, which provided laptops with internet access to students in grade 3 – 5.

Under the leadership of Principal Salvatore Punzo, East Rock has developed formal partnerships with HP Computers and Microsoft Corporation. Further, it is a model technology school for Compaq on the East coast using the new Evo N600C wireless laptops and a national model school for Microsoft in the use of NT, Internet Explorer and other software programs. The school has also been a model for Asante Technologies and was featured by Xerox corporation as the first school to formally introduce color laser printing to its students throughout the school's curriculum. The implementation of these partnerships has been made possible through the efforts of the school's technology facilitator, Domenic Grignano. The *New Haven Advocate* reported, "Grignano's Herculean efforts have paid off in hundreds of thousands of dollars in grants. In addition, by acting as a beta tester for an elaborate network and a variety of software programs, Grignano has managed to swing an enormous amount of basically free stuff."

With the focus on balanced literacy, global studies, and technology, East Rock's efforts have resulted in increased student motivation and achievement. Student scores on the Connecticut Mastery Test have increased steadily over the past five years. Furthermore, 20 students have been inducted into the National Junior Honor Society, and several students have placed in city and state-wide competitions. In her 1998 article on East Rock, journalist Sharon Cromwell reported, "At East Rock

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in New Haven, kids' enthusiasm for learning shines in their eyes -- thanks in part to technology! What's immediately apparent is how focused the students are, how absorbed in their work. The computer clusters foster student collaboration yet also allow independent work. Here is a school where computers are much more than word processors!"

## About PLATO Learning, Inc.

For more than 40 years, PLATO® Learning, Inc. has been a leading provider of computer-based and e-learning instruction for kindergarten students through adult learners, offering curricula in reading, writing, math, science, social studies, and life and job skills (PLATO Instructional Solutions). The company also offers an innovative assessment and accountability product line (PLATO Assessment and Accountability Solutions) and standards-based staff development (PLATO Professional Services). With thousands of hours of objective-based, problem-solving courseware, plus assessment, alignment and curriculum management tools, standards-based curricula facilitate learning and school improvement, helping schools meet the requirements of *No Child Left Behind*.

PLATO Learning acquired NetSchools Corporation on May 8, 2002. NetSchools was founded on the principle that all children deserve an education that meets their individual learning needs and fulfills the age-old dream of giving them the one-to-one support they need to achieve their greatest potential. NetSchools was the pioneer in one-to-one e-learning and accountability solutions for both transforming and reforming the nation's schools.

The company offers three wireless laptop solutions for schools. Constellation™ includes a wireless laptop computer for most students and teachers for home and school use, and a local wireless network that allowed high-speed connectivity. StarClassroom<sup>SM</sup> provides wireless student laptops on a mobile cart, and StarTeacher<sup>SM</sup> provides every teacher with a printer and wireless laptop. East Rock used the Constellation™ model.

## About Orion

In addition to providing a laptop for every student and teacher for school and home use, two other essential components for technology integration must be addressed in order to improve student achievement, namely, accountability to standards and staff development. To accomplish this PLATO provides Orion.

PLATO's Orion is an integrated curriculum management and assessment system for schools. It provides schools with instructional management tools to facilitate achievement, alignment, assessment and accountability for students, teachers, parents and administrators. Orion is a web-based application that allows teachers to match a specific objective within their state standards to over 47,000 pre-screened, correlated educational web pages, as well as to a school's existing software programs and textbooks. In addition, these searches can be immediately applied to a lesson plan template, with assignments delivered directly to students and their parents via an integrated calendar tool.

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With the Orion assessment tool, teachers can test their students online and, based on the results, the students will receive immediate individual academic assistance plans, including remedial activities drawn from a database of correlated resources. In addition, PLATO provides extensive professional development services to ensure that teachers understand and are comfortable with the capabilities of the technology.

PLATO makes the claim that these professional development services are designed to ensure systemic change within a school's environment. Each school begins with an implementation plan, followed by the gathering of the necessary school resources to place within the Orion system so teachers will have a clear picture of all the resources available to them to execute standards-based lesson plans and assignments, as well as assessments. A comprehensive professional development plan is then formulated to help teachers utilize Orion for lesson planning and creation of student activities, as well as utilizing the assessment options within Orion.

## About the Study

The purpose of this study is to present a summary of the impact and benefits of the PLATO technology in the East Rock Magnet School. Throughout this report, the following questions will be addressed to assess the extent to which the school has achieved its objectives for the use of the PLATO technology.

- What are the characteristics of the school?
- How has technology impacted student learning and instructional activities?
- Does technology seem to work for all students, including special populations?
- How do teachers use technology?
- How is technology being integrated into instruction, curriculum, management, and, indeed, the culture of the school?
- What changes occur at different levels of implementation?
- How does technology impact the relationship between the school and parents? Between the school and the community?

The report focuses on four objectives that were established to evaluate the effect of the PLATO program on students, teachers, parents and administrators:

1. Increase professional competency of the teachers and administrators in using technology effectively to reach challenging academic standards.
2. Increase technology and information literacy skills of students.
3. Increase community involvement in learning technologies.
4. Improve the learning environment by using digital content and networked applications to further standards-based instruction.

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## Research Tools

School data that serves as evidence in this report was acquired through school reports, surveys completed by school administration and staff, focus groups, press releases and other media documents, school websites, and information reported to PLATO.

A modified version of the Teacher Technology Survey, developed by the SouthEast and Islands Regional Technology in Education Consortium (SEIR·TEC) was one of the instruments used in gathering data for the Administrator Technology Survey.

CRF and Associates adapted the Technology and Integration Gauge, developed by SEIR·TEC, to collect information. Discussion items from SEIR·TEC's Professional Development Idea Workshop were used in one of the focus groups. SEIR·TEC is one of six regional technology in education consortia (R·TEC) funded by the U.S. Department of Education's Office of Educational Research and Improvement. SEIR·TEC is composed of educational organizations committed to providing information, professional development, and technical assistance for educators in the southern states, Puerto Rico and the U.S. Virgin Islands, in order to support and promote improvement in teaching.

CRF and Associates, Inc., used an adapted version of NetSchools' Teacher Technology Survey and Assessment to gather information on student and teacher technology skills. In addition, during the 2002-03 school year, at least five focus groups were conducted at the school. These focus groups elicited information regarding teacher expectations, staff development and teacher, student and parent perceptions about the impact technology integration had on student learning.

The schools also provided a wide variety of other data, including samples of students' work and standardized and state assessments.

Types of data collected are both quantitative and qualitative. Quantitative data consists of students' scores on assessments and other tests. Where appropriate, textbooks, tests, student products, teacher grades, discipline reports and attendance reports were reviewed. Qualitative data were gathered from focus groups, surveys, staff and parent meetings, interviews and products from school personnel and students.

# Focus Group Findings

During the 2002-03 school year, researchers conducted five focus groups with administrators, teachers, students and parents from East Rock. Richard L. Fairley, Ed.D., former Director of the National Title I Program, retired senior executive in the U.S. Department of Education and a principal in CRF and Associates, and Mary Jane Mikuriya, M.A., former Title I administrator and evaluator for the San Francisco Public Schools and former project leader at the U.S. Department of Education, acted as facilitators for the focus groups.

## Teacher Expectations for the Technology Project

### **Pre-Implementation Focus Groups for PLATO Evaluation**

East Rock Magnet School, New Haven, CT      September 11, 2002      Time: 1½ hours  
8 Participants: Principal, Vice Principal, Technology Resource Teacher, Library Media Specialist,  
Staff Development Specialist, a 3<sup>rd</sup> grade, a 4<sup>th</sup> grade and a 5<sup>th</sup> grade teacher.

The teachers at East Rock have been involved with technology for the past eight years. The Technology Facilitator and Systems Engineer is a credentialed former teacher at the school and helped encourage technology usage in the classrooms. He has sought out corporate collaboration and has developed working relationships with Hewlett Packard (formerly Compaq), Enterasys Networks, Xerox Corporation, Digital Curriculum, Altiris Software, Inspiraton Software, Visions Technology, STOP Security, and Bytes of Learning. He is delighted to have the new relationship with PLATO and has included a description of the PLATO Laptop Program on the School's Web Page, <http://www.eastrock.org/implementation.htm>.

Besides making sure the computers are always in working condition, the Technology Facilitator and Systems Engineer provides knowledge, leadership and training in the use of technology in the classroom. His published technology articles for educators indicate his commitment to and breadth of knowledge about technology in education. For example, his article, *News for Students*, suggested integrating news into the classroom curriculum or teaching it as part of a social studies lesson. He outlined the advantages of such usage and suggested websites for students to use; he noted that many of the recommended websites had a teacher section with comprehensive, easy-to-follow lesson plans. His article, *Free Teaching Tools*, dealt with printable worksheets, graphic organizer generators, worksheet makers, and test generators that teachers could find online. He provided a list of five websites, described each website and offered suggestions for making changes and saving printed material. Many of his articles provided information and then asking the reader a question about their thoughts on the subject under the title "Truth or Dare". Needless to say, he is a respected resource who has laid the groundwork and provided leadership for the immediate and effective implementation of the PLATO program.

Prior to receiving PLATO laptop computers, all classrooms had four student computers plus one computer exclusively for teacher use. The 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> graders will be using the PLATO laptop computers and program. The two barriers to using more technology in class were the insufficient

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number of computers for each student and teachers lack of experience in integrating technology into the curriculum. Teachers recognized that, with each student having a laptop, they would have to change their methods of teaching. They distinguished between teaching students about computers and using technology as a teaching tool, like a book or a pencil. Some teachers felt anxious about having to use technology as a tool, having never done this before. They felt they would need time to learn the technology before they could use it effectively as a tool.

Prior to the PLATO implementation, teachers at East Rock used word processing and Accelerated Reader software for reports. They used educational technologies to locate resources for themselves, to support student research and for the production of a student newspaper and a yearbook with colored photos. Staff felt that technology helped some students to become self-motivated. Teachers reported that some students designed their own web pages, took virtual fieldtrips, such as the butterfly migration in real time, developed PowerPoint presentations and used the computer as a teleprompter in East Rock's TV studio. Almost all these teachers said they had their own computers at home and paid for Internet access for their personal use. Despite their familiarity with technology, staff members felt they needed technical support and training in order to make technology relevant to their curriculum.

Staff cited the importance of having student acquire computer skills in order to compete in the workplace in the future. They agreed that the laptop computers and developing technology competence would be especially beneficial to those students without computers at home.

Teachers believed the computers would provide students with access to a world of current information unavailable in outdated texts and library books. The Internet connections would provide up-to-date encyclopedic information in print, sound and pictures and enable the students to write better reports. The teachers sensed that students with personal laptop computers would feel more excited about and be more engaged in their school learning. Staff envisioned the laptop computers as providing equal opportunities for the urban poor and English Language Learners to compete with native English-speaking students from more affluent families.

Teachers want to use computers to help students become more independent researchers and learners. They felt this would enable a teacher to work with other students, while the more self-directed students would become less dependent on a teacher for orchestrating their learning. Teachers anticipated technology making their job easier and providing time to focus teaching on areas of student weaknesses. Staff saw the computers as a way to help raise student achievement.

A unique benefit for students and teachers in this project is the ready availability of laptops for students whose IEPs call for computer usage to write because of poor handwriting skills. With specialized support for special education students, East Rock can become a model school for special education students in Connecticut.

Teachers supported the idea of every student and every teacher having a computer at school and at home. However, as practical educators, they were unsure whether students should be able to be able to take the computers home. They worried about breakage and loss.

When teachers were asked what kind and how much staff development would be necessary, they said they would like to see the New Haven School District Math and Reading Supervisors in Central Office working with PLATO staff to generate monthly curriculum in math and reading strands for meeting standards. This would be the content. Teachers also wanted training to address this content while demonstrating/modeling laptop-computers-as-a-tool to teach reading and math.

Staff agreed that achievement test results should be used to determine if the PLATO program was a success. Specifically, District Connecticut Mastery Test (DCMT), the district's practice test results should be analyzed and compared.

## Impact of Staff Development on the Technology Program

### **Focus Group for PLATO Evaluation**

East Rock Magnet School, New Haven, Conn.    March 20, 2003    Time 1½ hours  
6 Participants: Principal, Technology Facilitator/Systems Engineer, Library Media Specialist,  
and selected teachers from grades 3, 4, and 5.

### **Impact of the Technology Program ...**

#### **... on Teachers**

At first some teachers were hesitant to use computers in their classrooms. Seven months later, there were no reluctant teachers. They received training and timely, encouraging support in their efforts to expand the learning with computers in new, interesting and creative ways. The Technology Facilitator and the Library Media Specialist had flexible schedules which enabled them to develop curriculum units, provide training sessions, work in-class with teachers on the new units and help refine these units. Thus, with these two seasoned, on-site curriculum developer/trainers as well as having periodic support from the PLATO professional development trainers, the teacher learning curve was geometric. The teachers liked the fact that each child had a computer, because (s)he can see from behind whether each student is on task. The teachers all reported using computers enthusiastically and not looking at computers as a separate entity. Teachers stated they would not be nervous, if there were visitors to their classrooms.

#### **... on Students**

Focus group participants reported that students seemed better behaved and more focused in class. With the integration of technology, these 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> grade students showed increased enthusiasm for learning, especially in writing and in their projects using the PowerPoint program. Each child has a portfolio, which is saved to the P-Drive. In this way, if the child's computer crashes, nothing is lost.

#### **... on Administrators**

The principal was very pleased to see the teachers enthusiastic about their teaching and being more creative. The teachers' lesson plans are tied to standards, and, with the computers, the principal said he receives more assessment information and documentation of student achievement and successes.

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### **... on Community and Others**

Parent enthusiasm for the laptop program was very apparent at the open house. For students to have access to their own laptop computer, their parents had to sign an “Acceptable Use of Computers Policy”. All the parents came to the meeting on the laptop computer program and signed the policy.

### **The Relationship to the Local Technology Plan**

The school’s technology plan is based on the technology plan for the New Haven School District as well as national technology standards. Staff is oriented to the International Society for Technology in Education (ISTE) standards and performance indicators (found on [www.iste.org](http://www.iste.org)).

### **Delineation of Responsibilities**

#### **Professional Development**

The Technology Facilitator and Library Media Specialist are responsible for professional development. ISTE standards and performance indicators, as well as hands on support, are integral parts of teacher training. At their last training session, staff reviewed the ISTE National Educational Technology Standards for Students. The teachers were pleased to receive laminated poster-sized copies for their classrooms of the *Student Standards and Performance Indicators for Technology Literate Students, Grades 3-5*.

#### **Technology Infrastructure**

The Technology Facilitator/Systems Engineer is responsible for the maintenance and support of the technology system, while repairs for the machines and the network are carried out by the New Haven School District designated subcontractor for technology.

#### **Communication of Results**

The East Rock website has a section on the Laptop Program with the measurable goals and objectives for students, teachers, parents and administration.

Staff has developed a presentation for the Board of Education regarding the technology program and is awaiting a presentation date.

#### **Evaluation and Reflection**

Curricular units are evaluated with rubrics, developed by the technology resource staff. Students are to learn Excel, Microsoft Word, PowerPoint and Kidspiration programs. The rubrics give criteria to determine Novice, Apprentice, Proficient and Distinguished levels of competence. These curricular units and assessments are developed to ensure integration of technology.

The Technology Facilitator/Systems Engineer is a credentialed teacher with many years of teaching in the school. The Library Media Specialist has demonstrated her commitment to empowering students to use technology. She worked with students to use technology to design and publish the 2002 yearbook. Both technology resource persons are well-respected and appreciated by administration and staff for their vision, leadership and personalized help and support in using technology creatively and effectively in the classroom.

# Teachers' Focus Group at the End of the School Year

## Focus Group for PLATO Evaluation

East Rock Magnet School, New Haven, Conn. June 10, 2003 Time: 1½ hours  
10 Classroom Teachers: 3 3<sup>rd</sup>, 3 4<sup>th</sup>, and 4 5<sup>th</sup> grade teachers

The following summarizes teachers' responses to seven questions asked in the focus group session.

### 1. How has technology improved the *learning environment*?

Teachers reported that the technology embedded learning environment is enriched by video, sound and print resources. They said students are more motivated and enthusiastic about learning. The laptop computers gave students more opportunities to obtain information, making research easier. Teachers also appreciated the ways in which technology helped address the visual, kinesthetic, and auditory modalities of students. The computers also allowed students to be more creative in presenting information, especially using PowerPoint. All students in the 5<sup>th</sup> grade Inclusion Class were able to submit legible expository writing and appreciated being able to use spell check and the dictionary to do their work.

All 5<sup>th</sup> grade teachers would like to have one laptop per student, as the 3<sup>rd</sup> and 4<sup>th</sup> grade classes do, rather than the current one to four ratio. These 5<sup>th</sup> grade teachers would also prefer to use the laptops in their classrooms, as the 3<sup>rd</sup> and 4<sup>th</sup> grade teachers do, rather than scheduling laptop time in the library.

### 2. How has technology impacted student activities?

The educators felt that all students were very interested in technology, because they live in a technological society and recognize the importance access to technology has for learning and play. The teachers reported that, with computers, students were more engaged in their own learning. They took greater pride in their work and were concerned that their finished products looked professional. Students liked having options for self-assessment on their Accelerated Reading Program. With technology, the articles are varied and leveled to provide information at the child's reading level. Reluctant readers were pleased to read computer articles and respond to the questions on the computer. It was very clear that the laptop computer was a powerful behavior modification tool.

### 3. Is there evidence that students have increased their academic performance?

With the computer programs adapted to student learning levels and modalities, no textbooks were used in 3<sup>rd</sup> and 4<sup>th</sup> grade except in Social Studies. In 5<sup>th</sup> grade, students read chapter books and answered 10 questions regarding their reading. Students did better answering questions on their chapter books using computers than using pencil and paper.

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Teachers sad writing had greatly improved in the 3<sup>rd</sup> and 4<sup>th</sup> grades. When students hand-wrote a five-line paragraph, it became two lines when typed. Students learned to elaborate in order to write a typed, 5-line paragraph. Students found it is easier to format, edit and produce a much better product using their laptops. The 5<sup>th</sup> graders gained a deeper understanding of their material, which resulted in their getting better grades. More students did better on the Basic Reading Inventory (BRI) Test due to the large amounts of engaged reading on the computer. All passed. ELL and Special Ed students surprised their teachers with their deep understanding during their one to one BRI proficiency test.

Attendance or lack of it is not a factor when looking at academic performance in this school, since attendance is already high.

Teachers agreed that students were motivated to behave properly because they all wanted to use the laptops. When students were using computers, there were absolutely fewer discipline problems. The teachers noticed that the students were more respectful of the computers than they were to books. In fact, some 3<sup>rd</sup> and 4<sup>th</sup> graders asked to wash their hands before using their laptops.

#### **4. Does the use of technology seem to work for all students?**

Based on student needs, technology allowed modification of lessons and appropriate individualization of assignments and work for all students.

For regular students, the PLATO technology encouraged student sharing, helping peers and peer communications. For the reluctant or slow readers and for struggling students, there was more cooperative learning, sharing of websites and computer techniques, including how to add a picture to a report. With peer collaboration encouraged, student leadership emerged. Students could be seen helping each other, rather than relying on the teacher alone for assistance.

For English Language Learners, the pictures on the computer were very helpful in enabling students to grasp vocabulary more quickly. Computers were unfamiliar tools for many ELL students. The laptops helped these students become aware of computers in our society as well as being a helpful educational tool. With technology, students gained English skills faster and become more confident learners of their second language.

Special education students needed more one-to-one attention and help in using the computers. The benefits were outstanding for those who have difficulty with attention, focus and use of a pencil. Hearing impaired students were able to benefit from the different modality approaches offered by the computers.

#### **5. How do teachers use technology?**

The technology program provided teachers with computer access to Connecticut Standards and also to lessons correlated to the standards. The program saved teachers' preparation time by gearing instruction directly to Connecticut Standards. Teachers were pleased to be able to print out worksheets on targeted curricular areas, such as fractions, and to print three different versions so students do not have the same problem/answer to each question and cannot share answers. Teachers liked the program's open-ended questions for reading comprehension, Excel for math graphing and

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the up-to-date, ability-leveled, visual science and social studies materials. Some teachers give individual assignments on the computer so when the students picked up their laptops, they could begin their schoolwork immediately.

In terms of curriculum, computers facilitated cross-disciplinary learning in such areas of study as *Charlotte's Web*, wolves, the rainforest, chocolate and the impact of World War II on Jewish families. The computers provided in-depth, current, action-oriented and interactive technology support to learning—e.g., movies on the human body, information from a variety of sources on the nervous system and instant corrected answers to computer-generated questions on good writing skills.

As management tools, the computers enabled teachers to submit their lesson plans from their laptops, to maintain their daily planners, to type notices to parents and to post class assignments for immediate student response. Teachers also e-mailed student assignments and students e-mailed their work back to their teachers.

In the culture of the school, students used their laptops to write thank you notes to the hosts for their fieldtrips. They also used their laptops to research, design and write information and show photos on their science and Black History Month public display boards. The students in grades 3 –5 felt very special and proud to be learning to use laptops. The 7<sup>th</sup> and 8<sup>th</sup> graders wished they too had them.

## **6. Explain if and how the technology program has increased parent involvement in the education and technologies.**

Several months into the program, parents had an orientation to the laptops and the possibility that students might be allowed to take them home. Although there is no evidence that the laptop program increased parent involvement in their child's education, parents seemed more interested and proud of their child's work. Some parents reported being relieved that the laptops were not going home. As a Magnet school, almost all students ride the yellow school bus and parents feared loss of the computer on the bus.

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## **7. Give a specific example of something that you did and are proud of as a result of the laptop program.**

When teachers were asked to give specific examples of something that they were proud of as a result of the laptop program, 3<sup>rd</sup> through 5<sup>th</sup> grade teachers said they were surprised at their students' successes as well as their own accomplishments.

The teachers were able to use technology to help strengthen the curriculum in the different disciplines. The laptops provided the means to acquire information in a variety of ways, supporting the reading and vocabulary with visuals and enabling the production of a final piece of which both the students and teachers were extremely proud.

Several teachers used their laptops almost on a daily basis for reading and comprehension skills. Some have taken the open-ended, higher level thinking questions based on the Connecticut Mastery Test (CMT) and used them for read-alouds and guided reading groups. They used the Internet to do research in almost every subject.

One teacher was pleased to report that all her students at different academic levels and with different learning modalities were able to work on bar graphs using Excel. Students would gather information (science experiments, temperature, etc.) and then record information in Excel and create bar graphs. Students then used Microsoft Word to write questions or record results they obtained from these graphs.

Another teacher was proudest of the way the students rose to the challenge. The students worked so hard to read, find information and organize this into an expository essay. The students had their final pieces hung in the hallway with the pictures of what they found. Most of these students were special education students who worked above and beyond the expectations of 4<sup>th</sup> grade work.

One teacher was proud to report an integrated unit that covered science, social studies, reading, writing, and technology. Her students were required to research an endangered animal from the Rain Forest and then write a one- to two-page paper, create a PowerPoint presentation and a diorama. This teacher was happy with the large number of resources, thanks to the laptop computers.

The teachers agreed that students became more enthusiastic and involved in their own learning when using the laptops. Students became very familiar with CMT's questioning techniques, which have inspired their confidence in reading. Their writing improved greatly, because they loved to type on the computer and, therefore, wrote more frequently. They used the computer to look up just about anything. Students' grades improved due to the use of the computer. Students were extremely proud of their achievements. And, they have learned that doing something well has intrinsic benefits.

A 5<sup>th</sup> grade teacher summed up her opinion of the PLATO laptop program by saying, "I always thought that eventually I would be using computers in teaching my class on a daily basis; however, I never believed that it would be during my first year of teaching." She continued, "Computers are a central component to many of the things that people do in their everyday lives. For an 8 to 11-year-old to be able to have the experience these students have had is wonderful. Many of my students could probably teach adults a thing or two on the laptops!"

“I have learned to develop comprehensive lessons in which I can integrate technology in a wide variety of ways. My students have learned how to search the web for information they need and then go into Microsoft Word or another program to put what they learned into print. I truly believe that the exposure the students have had with technology, thanks to the laptop program, has been invaluable to them.”

## Student Focus Group

### Focus Group for PLATO Evaluation

East Rock Magnet School, New Haven CT    June 10, 2003    Time: 1½ hours  
21 students in grades 3-5: 6 in grade 3, 6 in grade 4, and 9 in grade 5

#### **1. Tell us the ways you use computers to do school work.**

A 3rd grader liked to use Microsoft Word to write stories and a report on *The Unusual Egg*. The 4th graders used their laptops for research and to write about famous people, such as Langston Hughes. They also wrote in their journals on the laptops and saved each entry for printing out later. The 5<sup>th</sup> graders were able to watch movies, such as “Brain Pop,” on their laptops. They learned about health issues and took a health quiz on the computer. Students read bound chapter books and then used their laptops to refer to the websites in the bibliography and answered questions on their book; they were graded instantly on their answers and then printed out their results. Students liked the freedom to develop their own questions about the U.S. Colonies and searched the web for their answers. They even used their computers to write letters to the President of the United States about the war in Iraq. Especially appealing to students was finding information for their research projects on the Black Caiman, the Rain Forest, and Eyes and the Human Body and then writing reports and designing PowerPoint presentations with pictures and sounds.

#### **2. As a result of using computers do you feel you pay more attention to your schoolwork?**

All the students agreed that they paid more attention to their schoolwork, because each student has his/her own laptop. They said the computers made learning more interesting and fun. The computers allowed them to be better and more creative in writing, using color and the spell check options. Students felt their grades went up with the use of their laptops, because they could make better presentations and offer more in-depth information. The laptops made the students feel more responsible for their own learning.

#### **3. Tell how computers have changed your interest in learning and in school.**

All the students agreed that the laptop computers made school more interesting and now, with the computers, they look forward to coming to school. One student who felt school was boring said he no longer feels that way. One student troubled by headaches appreciated the teacher providing

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assignments on line, allowing her to work at her own pace and on her own headache-free time schedule. Students said it was easier to type than hand write, easier to correct spelling errors and easier to look up words in the computer dictionary. One student who liked to play math games said he was surprised how much better he was in math now.

#### **4. Are there activities you do now outside the classroom as a result of the laptop program?**

With their newly found know-how with computers, the students were very pleased and proud to be able to teach others how to use the computer. Who did they help? Mother, father, grandma, brothers, sisters, Pen Pal in Africa, and people in the library who needed help. Some students helped family members write letters to relatives on the computer. One girl used her computer talents to develop a sign to sell lemonade. A boy helped a neighbor, who just had a baby, by developing a flyer asking for babysitting service. A 5<sup>th</sup> grader helped move a computer, set it up again, and reset all the programs.

#### **5. Give a specific example of something that you did and are proud of as a result of the laptop program.**

When asked to give a specific example of something that they as students were proud of as a result of the laptop program, 3<sup>rd</sup> through 5<sup>th</sup> graders all agreed they were proud of the outstanding school work that they were able to produce using the computer. A few felt pleased to be able to help family, friends, and teachers who don't know how to use the computer.

Some 3<sup>rd</sup> graders commented:

- "It's fun when we can play games and go on the Internet. We look at musical programs. I like that we can do stories and projects on the laptops."
- "I was pleased to have a partner to trust so if I got confused or got stuck my partner was able to help me" This enabled the boy to use both book and Internet to write his report.
- "I used my laptop to write paragraphs for *James and the Giant Peach*. The book was long, so, when I wrote my paragraphs, I had four full pages. I was proud because I did it without help."

One 4<sup>th</sup> grader said: "I was able to use my laptop by going on [www.50states.com](http://www.50states.com) to find a lot of interesting information on Iowa. I'm proud that I have the privilege to use my laptop and do it on my own." The 4<sup>th</sup> graders were pleased with their PowerPoint presentations and their reports with pictures. One student was proud because, "I typed a lot more than ever before and it included pictures." Another student noted: "I used spell check and edited it (my report). I'm proud because it turned out great when I printed it out." And yet another student said he was proud because "I did a PowerPoint on the Black Caiman for a Rain Forest project and I did it by myself."

There was great variation in the 5<sup>th</sup> graders computer skills. One boy said: "I never used a computer before. I learned things that I didn't know about on the laptop program. I learned about new websites from the laptop." Another boy said: "I help my teacher on her laptop when she doesn't

know what to do. I'm proud because I got to use what I learned to help someone." A girl indicated: "As a result of the laptop program I am able to find certain sites to help me with my homework and schoolwork." Two students observed: "I did a report on the eye and the human body and included a lot of information that I couldn't get from anything else but the laptop." and "I can search for many things quickly that I (would) need a lot of time to search for in a book. Our class is learning about the human body, so our teacher writes down the questions for us to answer. I can do it very quickly on the computer. I feel proud our school has computers so we can learn easier."

## **6. What do you think your computer knowledge will enable you to do for your future?**

The students recognized that computers are an important source of information for many questions. They also believed that computer knowledge and skills would help them get a better job. One student wants to be a neonatologist and will need the computer to provide patient information and files. She noted the computer is good at organizing files. Another student, who wants to be president, feels the computer will be helpful in learning about laws important for being president.

## Parent Focus Group

### **Focus Group for PLATO Evaluation**

East Rock Magnet School, New Haven CT    June 11, 2003    Time: 1½ hours  
9 Parents of Students in Grades 3 and 4: 2 with 3<sup>rd</sup> and 7 with 4<sup>th</sup> grade students

Observation: The parent focus group was an evening meeting held in the school library. All parents brought their children. All children went directly to the computers and did not run around during the parent meeting as they had at previous meetings. Parents reported that such behavior was typical of their children's interest in extending their learning using computers.

The parent focus group was conducted toward the end of the 2002-03 school year. The seven questions were designed to elicit parental assessment of the impact of the laptop computer program.

## **1. Before your child started using computers, what experience did you have with computers?**

Two parents had no experience with computers, three had some and four were familiar with computers and had them at home. Those who were familiar with computers used them at work, for their personal use, for their own schoolwork in college, and for helping with Little League. One of the parents, who used to work for a computer company, was very, very supportive of learning to use computers at an early age.

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**2. As a result of using computers in school, have you seen changes in your child's attitude to learning and school? If so, give specific examples.**

One parent reported that a 3<sup>rd</sup> grade daughter was excited and proud to be able to print a professional looking story that she wrote about a tiger. One 4<sup>th</sup> grade child was so interested in researching Martin Luther King Jr. for his Black History report that his mother had to compete for computer time in order to do her own school report. Another 4<sup>th</sup> grade child was excited about sharing his PowerPoint presentation on the Rain Forest that he had difficulty waiting his turn to share his project with his class. A 4<sup>th</sup> grade English Language Learner, new to the country and new to computers, is no longer intimidated by the computer but looks forward to using it and helping others, including his teacher.

**3. Have there been benefits for you and your family from your child's use of the computer, such as buying things or services on line, e-mail communication, interest in learning the computer, interest in adult education and other...?**

One parent was pleased to observe that her child had given up playing video games after school, now preferring educational computer games. One parent took an on-line course. Another parent at the meeting told how Connecticut Department of Labor had the best website for job announcements. After the meeting he used one of the school computers to show the parents how to look for jobs. All the parents gathered around him as he explained how to look for jobs by skill areas, zip codes, and requirements.

**4. Since your child started using computers, have you felt a greater need for you and your family to have a computer or gain computer skills?**

Parents have become very much aware of the importance of computers to their children. A few without computers said they felt left out and behind the times without a computer. They said they felt at a disadvantage because they were not able to see what their child was able to do on the computers and were concerned they were not able to help their children with their assignments. One parent got a computer and took classes so she did not have to constantly ask her child for help.

**5. Have you been more involved in your child's education/ school since your child has started learning to use the computer?**

All parents were pleased to find their children more open and willing to share what they were learning at school and to show their very professional looking, readable reports.

**6. What specific benefits of learning-to-use-computers do you expect for your child?**

With computers, the parents have seen the quality of their children's reports improve in their depth of understanding and communication, in format with the inclusion of pictures and in the

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professional look of the reports. They said their children want to write on the computers and have become more confident learners. Parents reported that the students are eager and ready to learn and want to go to school and even fight to go to school even when they are sick. They can't wait to investigate different web sites and broaden their horizons. The students felt very special being in the classes with computers. The children's confidence shows too when they say, "*I can do this,*" as they look at a TV program where computers are in use.

Parents agreed that computers are essential for their children's future -- college, jobs and life. All the parents agreed that using the computers had helped their children become more responsible for their own learning, and eventually their life-long learning that will enable them to be more productive citizens.

## **7. How can the school computer program at this school be of more help to the community?**

The parents were delighted that their children had an opportunity to learn the computer in 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grades but are concerned that the laptop computers are not available to the higher grades. They asked: What do computer literate 5<sup>th</sup> grade students do in 6<sup>th</sup> grade? Is it fair to expect them to go back to use just books and paper and pencil once they are computer users?

Ideally, the parents would like to have the laptops used in all grades. They felt the older students could be used as part of a buddy system to help younger students.

Parents would like to see their enthusiastic, computer literate children allowed to be after school mentors for senior citizens and younger children.

# Survey Results

## Teacher Survey

The data gathered and displayed in these graphs reflect the findings from the Teacher Technology Survey and Assessment adapted from a NetSchools Professional Development Instrument. The survey reports teachers' technology skills before and after project implementation. As the graphs indicate, growth was seen in 49 of the 50 areas measured.

Many teachers at East Rock had a working knowledge of technology before they adopted the PLATO Program. Nonetheless, all of the teachers surveyed reported growth in some area. The PLATO Program, combined with pervasive on-site support, provided opportunities to learn for teachers at all levels. Consequently, at least 75% of teachers surveyed expressed competencies in nearly all of the technology skills assessed.

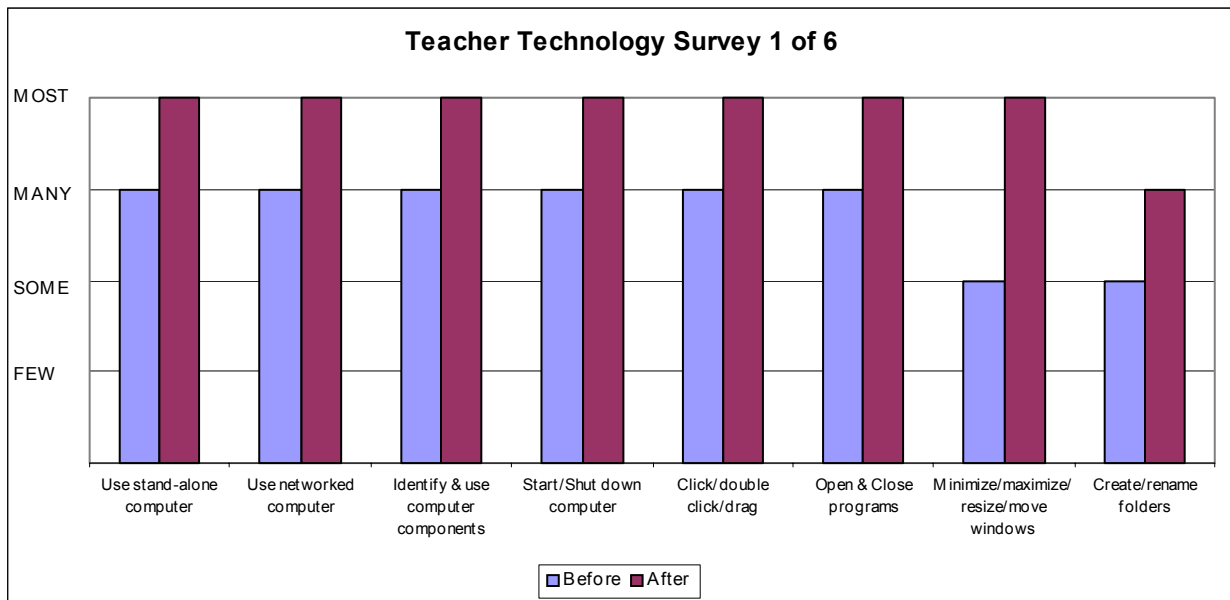
### SCALE

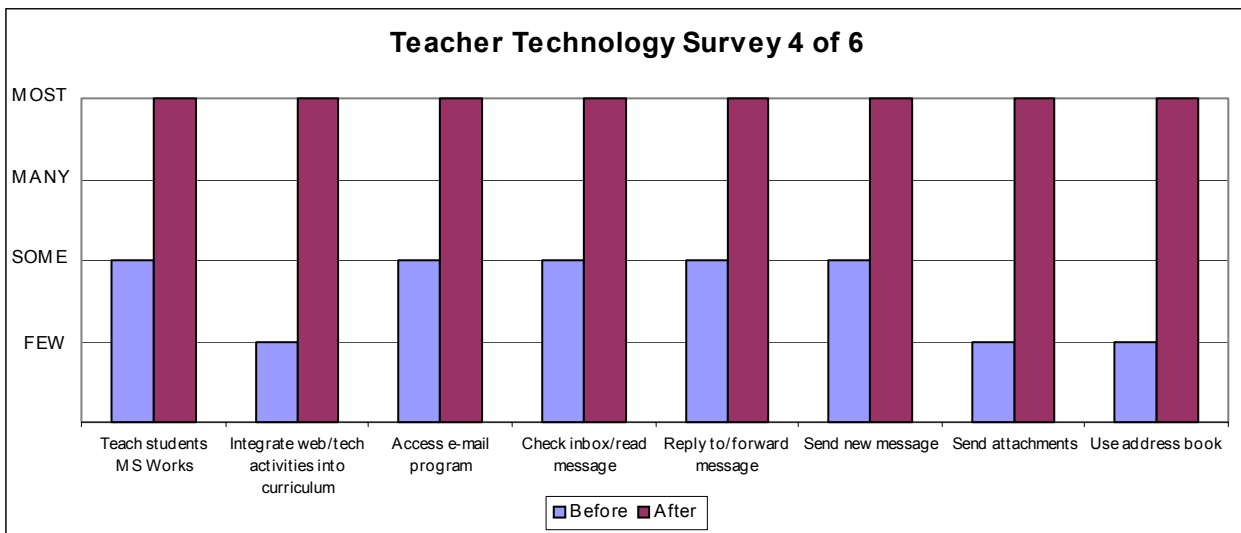
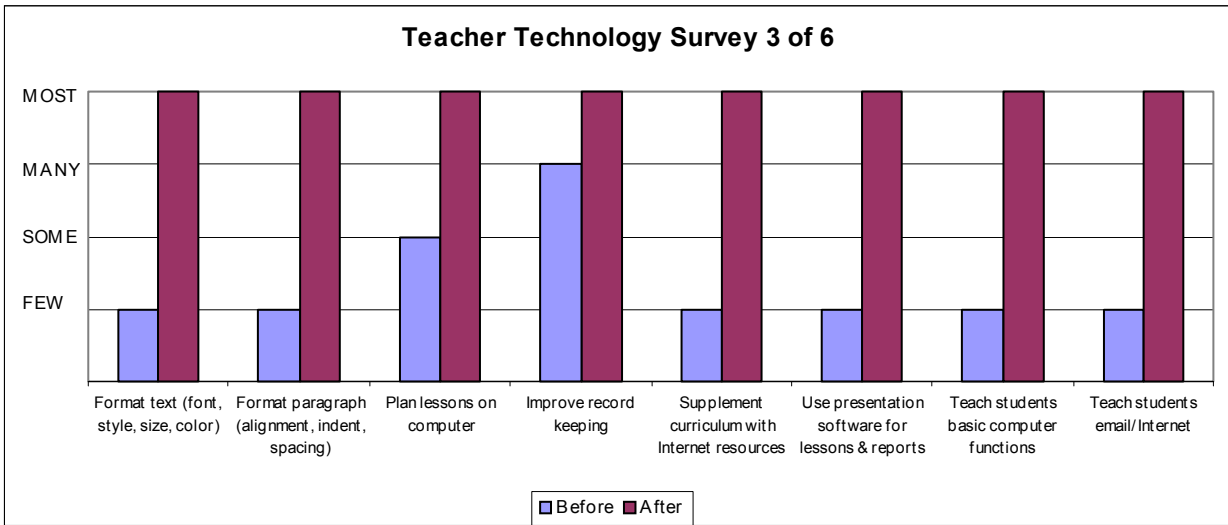
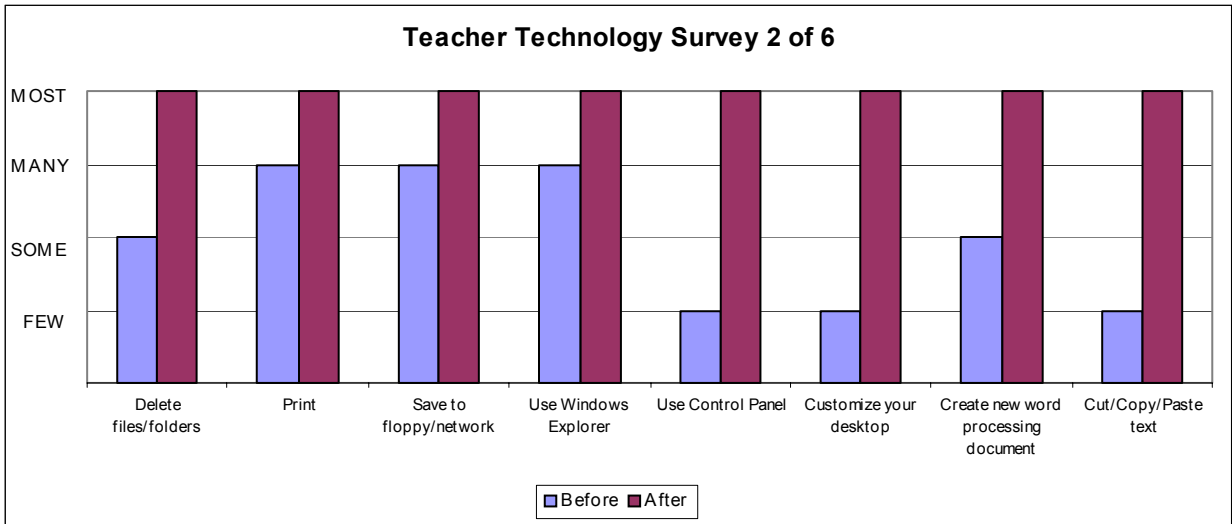
FEW – less than 25% of the group

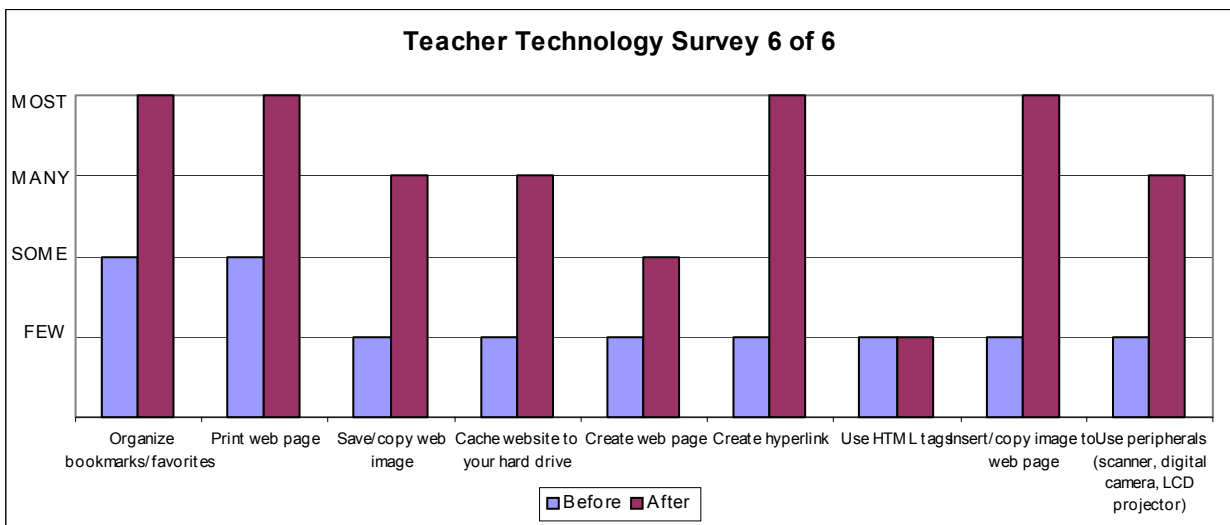
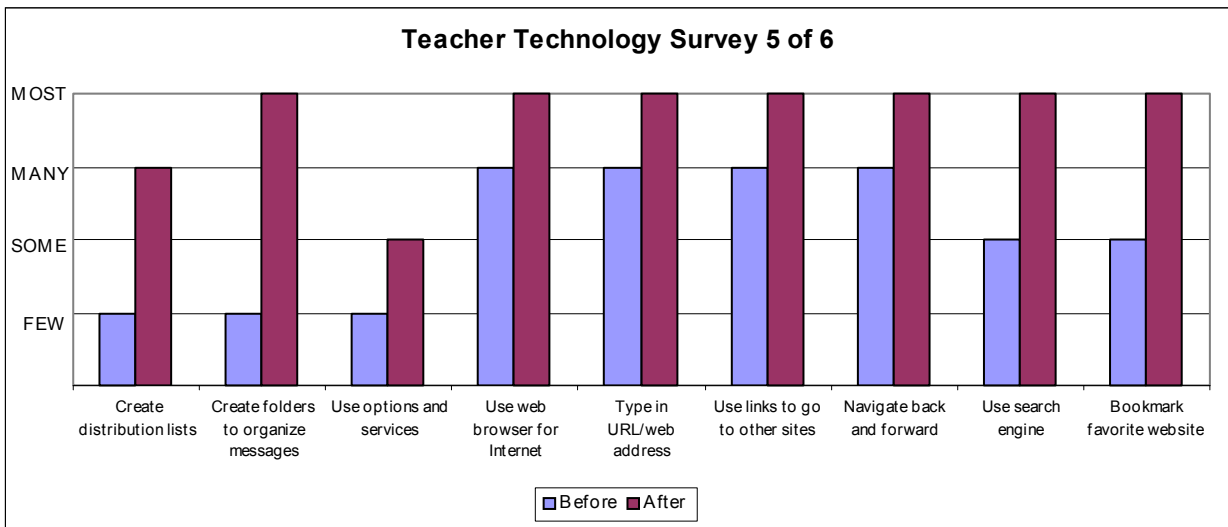
SOME – 25% to more than 50% of the group

MANY – more than 50% to 90% of the group

MOST – more than 90% to 100% of the group







## Administrator Survey of Student and Teacher Usage

The data gathered and displayed in the following graphs reflect the findings from the Administrator Survey, adapted from the SouthEast and Islands Regional Technology in Education Consortium (SEIR·TEC's) Teacher Technology Survey. The survey, which retained its validity and reliability, assessed impact on the student (Part B), teacher and administrator (Part C) use and activities.

Administrators reported gains in six of seven areas of student use of technology, with student motivation remaining consistent at nearly 100%. Administrators reported that nearly all students used technology to acquire basic skills, to become more critical thinkers, to discover new concepts and connections, to solve relevant and real life problems, to communicate knowledge and information and to construct knowledge. This is an increase of 75% in all areas, except the latter two, which both increased 50% from a higher starting point.

Growth was reported in all eight areas of teacher usage, i.e., using technology to create student materials, monitor student performance, modify lessons to meet students' needs, access online resources, integrate use of hardware and software into lessons, and to communicate with peers and experts via e-mail. Administrators reported a significant increase in the number of teachers who used technology to monitor student performance and incorporate technology in their teaching strategies.

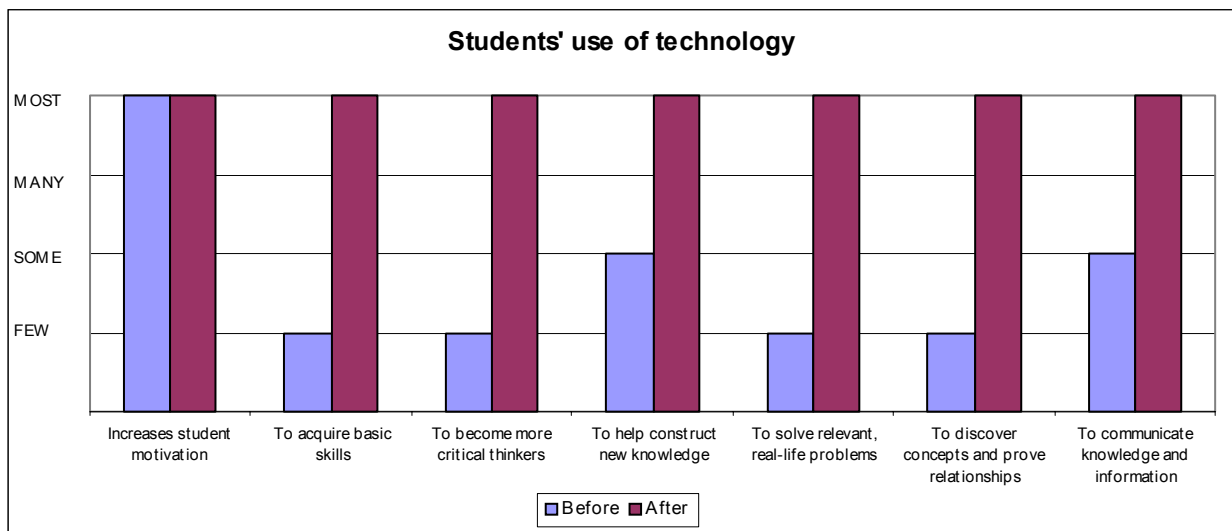
### SCALE

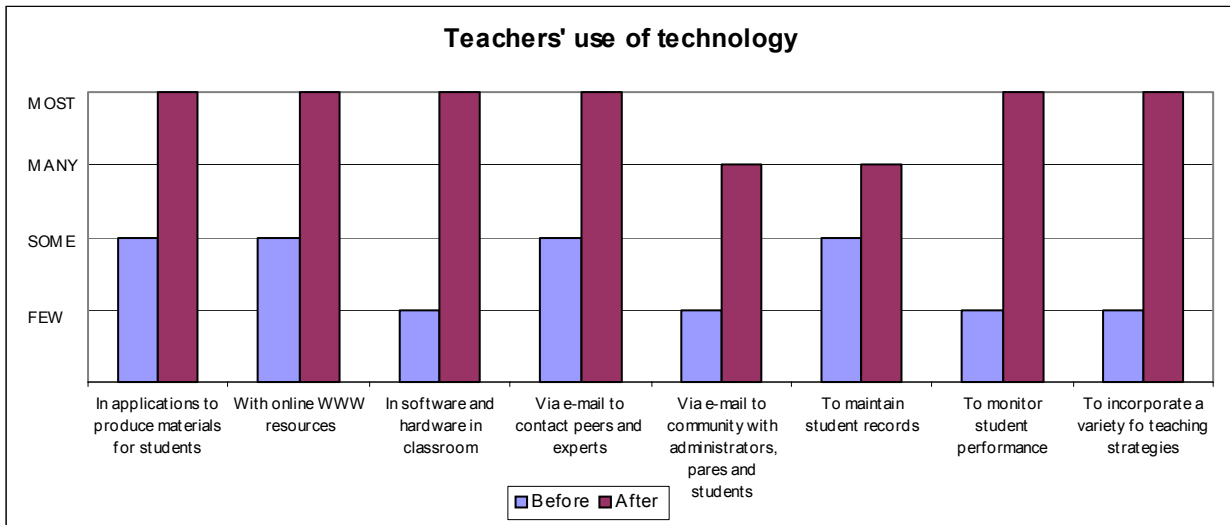
FEW – less than 25% of the group

SOME – 25% to more than 50% of the group

MANY – more than 50% to 90% of the group

MOST – more than 90% to 100% of the group





## Administrator Survey of Technology Integration

The graphs below display the impact that the technology program had on teaching and learning in all segments of East Rock. Administrators used a four-point scale (minimal, beginning, intermediate, advanced) to identify the level of progress in the five domains and indicators on the Integrative Gauge of Progress.

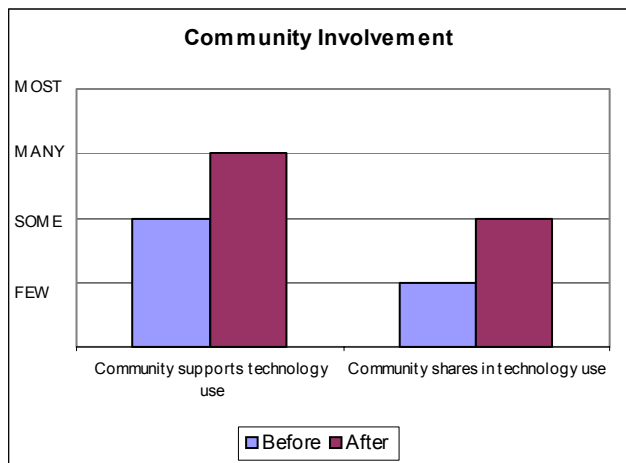
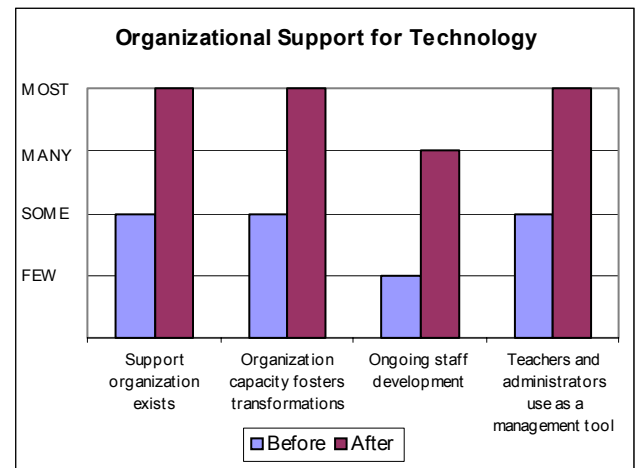
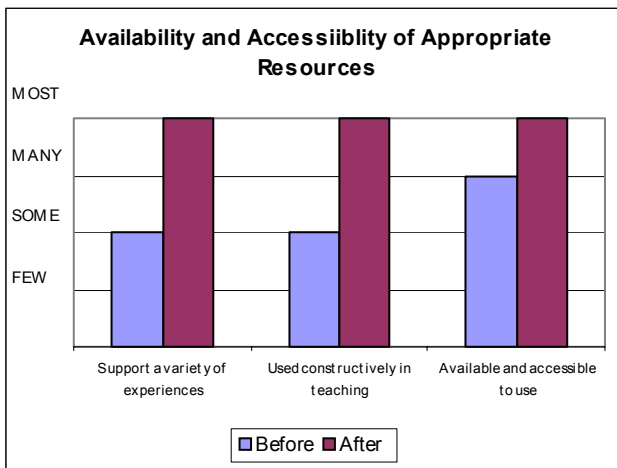
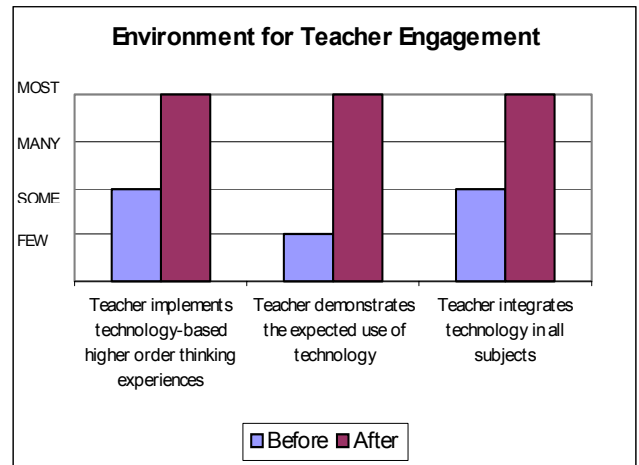
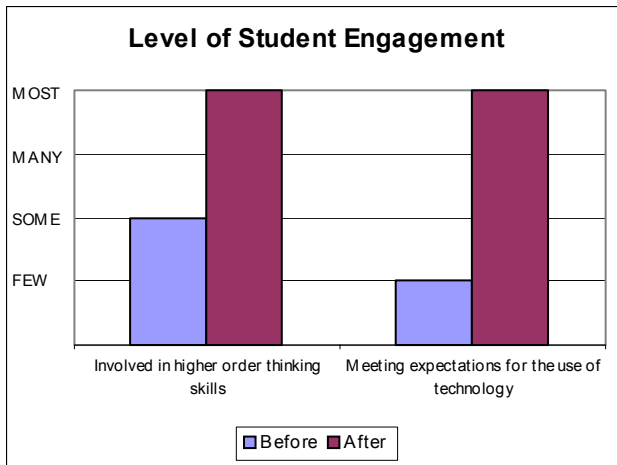
Administrators reported growth in all fourteen indicators, with the average level of growth of about two levels. Administrators reported that teachers have achieved advanced levels of technology integration, as evidenced by the extent to which teachers meet expectations for technology use. Community involvement in technology has progressed from the minimal stage to the beginning stage since the introduction of the PLATO Program. Administrators report that East Rock has achieved the advanced level of technology integration in the areas of teacher and student engagement, availability of resources, and technology support. Many are anxious to expand the technology resources into the higher grades.

The findings of this survey are presented in table format, illustrating the four levels of effectiveness from use **Before** PLATO and **After** PLATO Technology.

### SCALE

FEW – less than 25% of the group  
 SOME – 25% to more than 50% of the group

MANY – more than 50% to 90% of the group  
 MOST – more than 90% to 100% of the group



# Assessment Data 2002 - 2003

## *Developmental Reading Assessment*

The Developmental Reading Assessment (DRA), a state mandated test, assesses fluency and comprehension for grades K-3. In order to be promoted to Grade 4, a 3<sup>rd</sup> grader must have a DRA score of at least 34, otherwise, the student attends mandatory summer school. If the student still does not earn a 34, then the student is retained in Grade 3.

### **East Rock 3<sup>rd</sup> Graders promoted to 4<sup>th</sup> Grade as compared to New Haven (District)**

The assessments show that a higher percentage of East Rock 3<sup>rd</sup> Graders were promoted than other

<b>3rd Graders</b>	<b>East Rock N = 75</b>	<b>New Haven School District N = 1475</b>
Promoted to 4th Grade (34+)	<b>91%</b> of students	79% of students

3<sup>rd</sup> Graders in the District.

## *District Connecticut Mastery Test*

The District Connecticut Mastery Test (DCMT) was chosen instead of the Connecticut Mastery Test (CMT), because CMT Test results are not available until 2004. DCMT, or off-level CMT, models the CMT. Students, who will meet the state CMT goals in the following fall, can be predicted from the DCMT.

### **Grade 4 Average Number of DCMT Test Items Correct East Rock Compared to New Haven (District), May 2003**

<b>Grade Level</b>	<b>Maximum Score</b>	<b>East Rock Average Number of Test Items Correct</b>	<b>New Haven School District Average Number of Test Items Correct</b>
East Rock N=72 New Haven N=1490	28	<b>11</b>	<b>9</b>

The assessments show that 4<sup>th</sup> Graders at East Rock Magnet School had more items correct on the DCMT than other 4<sup>th</sup> Graders in the District.

## ***The Basic Reading Inventory***

The Basic Reading Inventory (BRI), a District mandated test, assesses fluency and comprehension for 4<sup>th</sup> and 5<sup>th</sup> Grade Students. The BRI consists of two subtests, Narrative and Expository. The BRI is recorded as either a Pass or a Fail. Fourth Graders must make a 4 in both Narrative and Expository to receive a Passing score. If the student passes in the winter, then the student is not retested again in the spring. In the 5<sup>th</sup> Grade, students must score a 5 in both Narrative and Expository to receive a Passing score. If they fail in January, they are retested in May.

### **BRI 5<sup>th</sup> Grade Scores East Rock Compared to the District (New Haven), May 2003**

		East Rock N=40	New Haven School District N=629
Grade Level	Scores are recorded as either a <i>Pass</i> or <i>Fail</i>	% of Students	% of Students
5 <sup>th</sup> Grade	Pass	91%	80%
	Fail	9%	20%

The assessments show that a higher proportion of East Rock 5<sup>th</sup> Graders passed the Basic Reading Inventory than the District.

## ***Summary***

East Rock scored higher than the District, specifically on 3<sup>rd</sup> Grade promotions, 4<sup>th</sup> Grade DCMT, and 5<sup>th</sup> Grade BRI. The school is confident that the increase in the academic performance of East Rock Magnet School students in grades 3, 4, and 5, when compared to the District, can be attributed to the PLATO Technology Program.

# Student Acquisition of Technology Skills

Over the course of the 2002-03 school year, researchers visited each classroom in the project, and meetings were held with each classroom teacher. Each student in the program acquired, at a minimum, the following basic computer skills.

Use stand-alone computer (desktop or laptop)
Use networked computer
Identify & use computer components (keyboard, pointing device, disk drive, CD-ROM)
Start/Shut down computer
Click/double click/drag
Open & close programs
Minimize/maximize/resize/move windows
Create/rename folders
Delete files/folders
Print
Save to floppy/network
Use Windows Explorer
Use Control Panels
Customize your desktop
Create new word processing document
Cut/copy/paste text
Format text (font, style, size, color)
Use web browser for Internet
Type in URL/web address
Use links to go to other sites
Navigate back and forward
Use search engine
Bookmark favorite website
Organize bookmarks/favorites
Print web page
Save/copy web image
Cache website to your hard drive
Create web page
Create hyperlink
Use HTML tags
Insert/copy image to web page
Use peripherals (scanner, digital camera, LCD projector)

# Findings

During the 2002-2003 academic year, the PLATO Technology Program contributed to:

## **Increased professional competencies of teachers and administrators in using technology to accomplish educational objectives**

- There was an increase of 75% in the number of teachers who used supplemental Internet resources when they are lesson planning and integrated web activities into the curriculum. .
- All teachers reported using technology to produce student materials.
- Nearly all teachers can perform basic computer functions and utilize personalization features such as the control panel. This is an increase of at least 25%.
- Nearly all teachers can navigate the internet and perform a variety of tasks using e-mail.
- Nearly all teachers use technology for administrative tasks such as record-keeping and lesson planning.

## **Increased technology and information literacy of students**

- All students involved in the program used word processing software. This is an increase of 50%.
- While 25% of students used spreadsheets before the PLATO Project, nearly all students had used spreadsheet software by the end of the school year.
- All students used e-mail and the internet in their classes, up from 25% and 50%, respectively, before the PLATO Project.
- Nearly all students in grades 3 -5 used presentation software, an increase of 75%.

## **Increased academic performance of students**

- Teachers reported that students' essays were longer, more elaborate and more complete.
- Students more willingly and completely edited and revised their work using technology.

## **Increased use of technology to help students reach challenging academic standards**

- Teachers' planning resources were linked to the Connecticut State Standards.
- 75% more teachers reported integrating special applications for reading and math into their lessons.
- Nearly all teachers reported using technology to create student materials, including assessments that provided immediate feedback..

## **Increased use of technology to facilitate instruction that meets the needs of students with different learning styles and skill levels.**

- All teachers used technology to incorporate a variety of teaching strategies.
- With the PLATO project, nearly all teachers used technology to support tutorials and basic skills development. This was an increase of 25%.
- Reluctant Readers often read articles on the web and answered questions on the computer.
- Independent Readers were able to self-assess using Accelerated Readers.
- Access to pictures increased the comprehension levels of English Language Learners

- Teachers noted that enriched video, sound and print resources enabled them to address the visual, kinesthetic and auditory modalities of different students.

### **Increased emphasis on higher order thinking skills**

- Administrators reported a 50% increase in the number of teachers who implement technology based higher order thinking experiences.
- Before the PLATO project, administrators said that only 25% of students used technology to solve real life problems, to discover concepts and relationships, or to become critical thinkers. During the PLATO project, nearly all students had used technology to achieve these ends.
- 50% more students used technology to construct new knowledge.

### **Strengthened teachers' professional learning communities**

- Survey respondents noted that support for technology had improved. They ranked East Rock at the advanced stage of integration for this category after the PLATO project, as opposed to the beginning phase before PLATO.
- All teachers surveyed said that their school culture fostered transformation using technology, indicating progress from the beginning to the advanced stage of technology integration.
- 75% of teachers reported that they had access to ongoing staff development, a shift from the beginning stage before the PLATO project to the intermediate stage.
- The Technology Facilitator and Media Specialist are highly qualified and serve as full time, in-house technology resource personnel who support technology enhanced curriculum development.

### **Increased, pervasive and consistent integration of technology in every 3<sup>rd</sup> through 5<sup>th</sup> grade classroom**

- Administrators reported that 75% more teachers demonstrate expected use of technology in their classrooms.
- All teachers expressed confidence in teaching students basic computer skills, such as how to use e-mail, and how to use Microsoft Works..
- Administrators noted an increase in technology integration across all subject areas that is indicative of progress to the advanced stage of technology integration.

### **Increased communication among members of the school community**

- Teachers reported that almost 100% use e-mail to contact their peers and experts, up from 50% before the integration of the PLATO project.
- Seventy-five percent of the teachers used e-mail to contact the administration, parents, and students.
- Teachers often submitted lesson plans to administrators electronically.
- Some teachers used the internet to post assignments for immediate response.
- Teachers and students at East Rock e-mailed assignments to one another.

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**Increased dialogue between school and parents to make technology more accessible to the community**

- Community members' awareness of and support for technology increased. Administrators reported that community groups are meeting with school groups to plan technology integration activities.
- Community members are working with the school to develop policies and strategies to increase community use of technology
- Parents used school-based technology to help each other navigate job websites.
- Parents reported an increased awareness in the need for technology instruction and use.

**Assisted with the implementation of the No Child Left Behind Act**

- Administrators reported an increase in the documentation of student achievement since the introduction of the PLATO Project.
- All teachers used technology to monitor student performance, an increase of 75% since the introduction of the PLATO Project.
- Teachers reported more success with special education student accommodations through increased technology use.

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## Conclusion

East Rock Magnet Elementary School has experienced tremendous growth as it reoriented its curriculum and resources around the infusion of technology during the 2002-03 school year in order to prepare students for an ever-expanding and interconnected world. Under the leadership of the principal, Salvatore Punzo, and expert guidance from the school's two technology resource professionals, Domenic Grignano, Technology Facilitator, and Paula Daitzman, Media Center Specialist, East Rock teachers and students worked with the PLATO technology to transform teaching and learning in their community. East Rock became more of a learning community, as teachers took advantage of opportunities to build their own technology skills, and students became more comfortable, competent, and confident as learners who used technology as a tool.

Throughout the academic year, East Rock showed significant improvement in all measured areas, and advanced quickly to the more complex levels of technology integration. Students, staff and community members expressed excitement about their work, the levels of support that they were receiving, and their own abilities to make continued progress. East Rock Magnet School should be considered a model site for technology integration.